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Autore	Snider Ross K.
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction to SoC FPGAs -- Hello World -- Software Control of LEDs via Registers -- Audio Codec and headphone driver -- FIR Filtering -- Data Movements using Direct Memory Access (DMA) -- Frequency Domain Processing using FFTs -- Time Domain Sound Effects Processors -- Frequency Domain Sound Effects Processor -- Hearing Aid -- Multiple Audio Personalities.
Sommario/riassunto	This textbook teaches students techniques for the design of advanced digital systems using System-on-Chip (SoC) Field Programmable Gate Arrays (FPGAs). The author demonstrates design of custom hardware components for the FPGA fabric using VHDL, Matlab, and Simulink, with implementation of custom hardware-software interfaces. Readers gain hands-on system level experience by creating custom hardware and then writing programs and Linux device drivers to interact with their hardware. This textbook enables laboratory experience in the design of custom digital systems using SoC FPGAs that emphasizes digital signal processing and culminates in the reader creating a real-time audio sound effects processor. Uses an Integrated Hardware/Software Approach to teaching Digital Design; Walks readers through the creation of a complete custom computer system that can accelerate audio signal processing; Enables students to develop a system-level view of computing and develop skills to create custom hardware and software.